M.R.O. 1—20,002—12-8-65.

(1) Number of Pages 12.

(2) Date of repair 29. 7.65

(3) Initials of the Referencer

MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No. 110 —Press—
B.P. No. Mis.

Dated 19-8-1872 196

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department, 1st August 1872.

Read the following papers:—

No. 8. From the Acting Superintending Engineer, 1st Division, to the Secretary to Government, Public Works Department, dated Dowlaishweram, 20th May 1872, No. 680.

With reference to your memorandum No. 48, dated 4th instant, on the subject* of the preservation of fish in the rivers of the Madras Presidency, I regret to state that not knowing anything at all connected with this subject, I am unable to furnish any remarks or suggestions.

* *Vide* G. O., No. 2,960, dated 23rd November 1871.

No. 9. From the Superintending Engineer, 2nd Division, to the Secretary to Government, Public Works Department, dated Masulipatam, 30th December 1871, No. 130.

In reply to G. O., No. 2,960, dated 23rd November 1871, I have the honour to report that the ladder in the Kistna anicut appears to me easily surmountable by fish; but I cannot find that any attempt it. I have had it watched and examined the neighbourhood myself, but I see no signs of fish in the pool below nor can I get any news of fish being caught except near the mouth of the river.

No. 10. From the Superintending Engineer, 3rd Division, to the Secretary to Government, Public Works Department, dated Cuddapah, 1st December 1871, No. 1,670.

With reference to G. O., No. 2,960, dated 23rd ultimo, I have the honour to inform you that I have no suggestions or remarks to make on the subject of "preservation of fish" in the rivers of this Presidency.

2. Paragraph 2 of the above G. O. does not affect this division.

No. 11. From the Superintending Engineer, 4th Division, to the Secretary to Government, Public Works Department, dated Madras, 2nd July 1872, No. 1,371.

Adverting to the Proceedings of Government, No. 2,960, dated 23rd November 1871, calling upon the Superintending Engineers for information relative to the question of preserving fish in the rivers of the Madras Presidency, I have the honour to state that I have no observation to offer on the subject.

No. 12. From the Superintending Engineer, 5th Division, to the Secretary to Government, Public Works Department, dated Virdachellum, 14th May 1872, No. 38.

In reply to your memorandum No. 48 of the 4th instant, I have the honour to state with reference to the Order of Government of the 23rd November 1871, No. 2,960, that no fish ladders have been built in South Arcot. The only anicut

in the district where one of the under-sluices might possibly be converted into a fish-pass, in the way suggested by Doctor Day, is the one across the Vellaur.

2. As I have only just seen the Order of Government, I cannot give any further information at present, but the subject shall have my attention.

No. 13. From the Officiating Superintending Engineer, 6th Division, to the Secretary to Government, Public Works Department, dated Tanjore, 5th April 1872, No. 11.

With reference to G. O., No. 2,960, dated 23rd November 1871, I have the honour to report that I have made very careful inquiries regarding the fish-ladder at the Lower anicut, the result of which leads me to believe that the ladder is not used at all by the Hilsa, the fish, for whose especial benefit it was constructed.

2. It is hardly possible that if fish of the size of the Hilsa when going up the rivers to spawn used the ladder they should not be seen when leaping from bay to bay; but the Monigar and lascars who are constantly on the work declare that they have never seen a Hilsa going up, they say some little fish may be seen at times but these are not Hilsa.

3. I questioned the contractors for fisheries in the Coleroon above the Lower anicut, and many of the fishermen not only just above the Lower anicut but up to the Upper anicut, and only one man stated that he had seen a Hilsa caught since the breach in the Lower anicut was closed, and this fish he said was 4 or 5 inches long. I have delayed replying to the G. O. on the subject purposely that I might have an opportunity of personally inquiring of fishermen and others, and this is the only instance I can hear of a Hilsa having been seen above the Lower anicut.

4. I cannot say, with any certainty, why the fish-pass is not used, as I have not seen it when water is passing over the anicut, but it struck me when examining the pass that the velocity of the water passing down it must be very great, and that the bays were not large enough or sheltered enough. I also think that the foot of the ladder should be carried further down stream beyond the apron of the anicut; the width of the pass is so very small compared to that of the anicut that I do not see why fish are to come to it when it discharges amidst the broken water immediately below the anicut, whereas if it was carried into the comparatively still water of the pool below the apron, the cascade would attract fish to it.

5. The arrangement proposed by Doctor Day in his letter which accompanied G. O., No. 555, dated 25th February 1871, I fear will not answer so well as he expects. I think the velocity of the water through an opening 1½ feet square will be too great to admit of fish going through it easily; the velocity of course depends on the depth of water on the lower apron, or rather the difference of head above and below the anicut and would not always be too great; but looking again to the size of the opening in comparison with the width of the anicut, there being nothing to lead the fish to the opening, it would probably be but little used. If every under-sluice were provided with double shutters and openings arranged according to this plan, it is probable that fish would go up in some numbers, because, when the water is but little above the crown of the anicut, the discharge

through these openings would certainly lead the fish up to the under-sluices, as we see now that even the leakage through the shutters induces the fish to come into the under-sluices, and if every under-sluice were provided with a passage, the fish would easily find their way up. This arrangement, however, would entail considerable expense in construction, and also would necessitate the working of double sets of sluices, a very serious matter to which there are strong objections.

6. The plan that seems to me most likely to succeed is substantially that proposed by Doctor Day in paragraph 35 of his report dated 1st December 1868, namely, the construction of a lock in the under-sluices. I should propose to select one bay of the under-sluices opposite to the deepest part of the river, extend the piers for some little distance below the dam, and, near their lower ends, fit ordinary lock gates without balance beams but working on wheels under the mitre posts and capable of being pulled back in the recesses in the wall by chains, and there fixed by an iron bolt or otherwise during floods. The apron immediately below the lock should be lowered at least 6 inches below the ordinary level which would lead the fish up, and the lock gates and shutters above could be worked as described by Doctor Day, or as might be directed. The present shutters would be used as upper gates to the lock, but the working might be simplified by substituting a single screw shutter in place of the present baulks. One lock in each branch of the Lower anicut would probably be sufficient.

7. These locks would possess one great advantage over a fish-ladder, in that they can be worked when the water is below the anicut, and would thus enable the small fry to pass down the river after the water has fallen below the crest of the anicut. When the flood season is over in the Coleroon, the small fish that may remain above the anicut have no chance of escape at present, not only are the pools netted over and over again, but barriers are erected across the shallow water in every river and channel and almost every fish is taken out. There are, of course, a few that escape in the pools immediately below the anicuts and calingulahs which are not allowed to be fished, but it is impossible to prevent poaching entirely in these places, and here the natural enemies of the fish, alligators and snakes, also retire, so that when the dry season is over but very few fish remain in the rivers.

8. As regards the other points referred to by the Government of India in their Proceedings dated 2nd October 1871, No. 28, I am decidedly of opinion that a close season should be established on the Coleroon during the time the fish are going up to spawn in greatest numbers. The breeding months of the Hilsa are stated by Doctor Day to be here from June to September; if the whole of this time was every year closed for fishing, the fisheries, I imagine, would let for very little, but two months might be closed, I think, without any great loss, and the shutters of the locks being worked daily, a number of fish would certainly get above the anicut and descend during the later floods in safety when fishing is, as far as I see, principally carried on from the banks alone.

9. I do not think any restriction in the size of the meshes of nets used in this district would answer, a close season of two months would enable many fish to go up and spawn in safety, and during the later floods and even after the water fell below the crown of the anicut, the fry would descend, in the first instance, over the anicut, and then through the locks and might reach the sea. It is not till the

water is very low that the fry are in much danger from netting, and if the size of the meshes of nets are restricted the fishing would almost be put a stop to at the time when it is most practised, the velocity of the rivers here when in flood being such as to prevent much fishing.

10. The number of alligators in the Coleroon is, I think, exaggerated, and they are rarely seen in other rivers in this division. They, of course, destroy fish, and at times are reported to carry off sheep and dogs, and people are afraid to venture into the water in the holes where they are known to live. A small reward for their destruction and for eggs brought in would no doubt diminish their numbers and do good. There are wandering tribes (basket-makers principally I believe) who frequent the banks of the Coleroon and catch the alligators for food; a reward would no doubt lead these people to greater exertions in alligator catching.

11. The suggestions I have made relate, as it will be seen, to migratory fish, especially the Hilsa. I do not see how the destruction of the small fresh water fish in these rivers can be prevented, as the water dries up they take refuge in the pools, most of these in their turn dry up, and the fish become the prey, if not of men, of birds, beasts and snakes, and only in the deeper pools at no great distance from the coast can they escape at all. The deep pools could be preserved, and war being made on the alligators and snakes considerable number of fish saved at a small expense, but I do not feel certain that much would be gained. How is it that although every year, as I have stated, the river is almost denuded of fish, there are still vast numbers in the season of freshes? And can it be proved that the numbers of these fishes is yearly diminishing? If the numbers are diminishing and we have only to look to those saved in the deep pools for stock, I should certainly recommend that all fishing of any sort should be put a stop to in the Coleroon where these pools exist after January. In the other rivers there are no pools and no restriction would, therefore, be necessary.

No. 14. From the Acting Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Coimbatore, 21st March 1872, No. 279.

With reference to the papers printed with G. O., No. 2,960, dated 23rd November 1871, and the order thereon, I have the honour to forward two useful reports from the Neilgherry* and Irrigation† Range Officers on the subject, and further to note that, in my opinion, it is very desirable that a "close season" should be established, and such might easily be enforced by the payment of small rewards to informers, and the punishment of those who infringe the rules laid down for the preservation of fish; but I fear any attempt to adopt any precise measures for securing "fair fishing" generally would involve the maintenance of a large, most expensive, and at the same time doubtfully, useful establishment.

* No. 209 of 20th December 1871.
† No. 1,335 of 4th March 1872, with a list.

2. In Canara in some places the practice of drugging fish is very prevalent, large quantities are annually captured in this way, rendering such conduct on the part of fishermen concerned punishable with heavy fine, or imprisonment, would

soon put a stop to it. A reward of 2 Annas per crocodile's egg would tend much to reduce the numbers of these animals.

3. Except the Kodavali anicut on the Bhowany, all the anicuts in the Coimbatore District are frequently submerged during the year, and thus no fish-ladders are required except at this anicut. The question of preserving fish in Irrigation channels when laid dry for clearance or repair is a difficult one; the best plan that suggests itself to me is that of opening all under-sluices and tambogies all along the channel to be laid dry; as these works nearly all drain into rivers, the fish would naturally leave the channel with the water, at all events would not be destroyed in the large numbers they are at present; the existing practice being to raise small dams across the channel and fish it by sections, thus hardly a fish escapes.

From the Executive Engineer, Neilgherries, to the Acting Superintending Engineer, 7th Division, dated Ootacamund, 20th December 1871, No. 209.

With reference to the subject of G. O. No 2,960 of 23rd November last, Public Works Department, upon which you have invited me to offer suggestions, I have the honour to report that to the best of my belief there are no large, and but few small fish natives of these hills. Small fish, 3 or 4 inches long, are caught in the driest season in the Pykara, Avalanche and Makoorty rivers, and in the Gooroomund and Porthy streams by the low country natives, who eat them with great relish. The hill tribes, I believe, never attempt to obtain fish.

2. Fish, such as trout, carp, tench, etc., have from time to time been brought to these hills, and efforts have been made to propagate them with success; but the experiments have been on too small a scale to afford much information for future guidance. The attempt has never yet been so far prosecuted as to offer fish in the markets as an article of food. About eighteen months' ago some 30,000 fish of various kinds were put into the Ootacamund lake. During the heavy rain storm which visited Ootacamund on the 7th of November last, a considerable number of these fish were washed over the waste weir which was running over 4 feet deep, and several baskets full were picked up by the natives in the stream four miles below the escape, and offered for sale in Ootacamund. They were mostly of small size.

3. The fish in the lake and in the Government Garden ponds seldom rise to a fly, and are never seen jumping about in the water. Tench, of which the greater part of them consist, are, I believe, fond of burrowing about in the muddy bottom of the pond, and it is probable that they obtain a great quantity of food, such as water-snails, crustacea, etc., at the bottom among the weeds with which the lake abounds so as not to care to jump for flies, etc. This fact probably accounts for the fish being never seen and makes it a difficult matter to catch them.

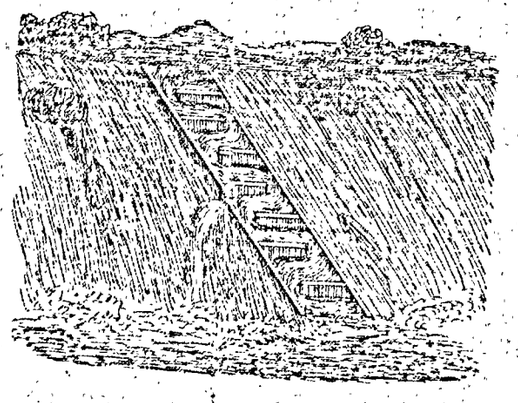
4. In the new lake sluice now just finished it is proposed to erect a galvanized iron wire fence in front of the wings. The meshes of the net are three quarters of an inch from knot to knot. This screen will probably prevent the exit of fish, but it will also choke with weeds and debris brought down by the stream, and will need to be kept constantly clear while the lake waters are being let out. As far as the sluice is concerned, the wire fence will be in the way, but it is hoped it will prevent the escape of fish.

5. With regard to the subject generally connected with these hills, I beg to suggest that the Pykara river for about 2 miles near the public bungalow, and the Porthy stream for about 1½ miles near the site of Mr. McIvor's bund, be selected as suitable spots for trying an experiment on a large scale with *fresh water* fish. Both rivers at these parts have always abundance of water with a sluggish current (except during freshes). Along their banks it would be easy to form the necessary ponds, conduits, cisterns, railings and apparatus for the protection of the fish during the spawning and rainy seasons for the protection of the ova and of the fry. Fish like salmon which need to visit salt water are, in my opinion, quite out of place on these hills. No salt streams of any kind exist here, and it is impracticable to attempt to provide for the passage

of the fish to the sea. The falls and rapids in the rivers are so steep and long (extending for miles) that the formation of ladders would be most expensive, and when the fish reached the foot of the hills they would have to traverse very many miles before they could get to the sea. The extreme dryness of the rivers for eight months of the year and the swollen dangerous floods for the remaining four would also be very much against them.

6. The Marlimund and Dodabetta reservoirs and the Burnfoot and Lawrence lakes would seem suitable places for the introduction of such fish as inhabit large ponds in England. As for the prevention of the escape of the fish over the waste weirs of these lakes, I think it impossible to attempt anything in the way of obstructing the water-way by the introduction of wires, etc., as these would choke up during floods, and the waters would rise and threaten the tank bunds with destruction. From the tail of the escape a ladder might be constructed leading into a large cistern or series of cisterns in which, when the overflow subsided, the fish might be captured and put back into the tank.

7. The Dodabetta reservoir, the Burnfoot and Lawrence lakes are in the same valley, one below the other. Ladders might be constructed between them; but at a great cost, as they would be something like three miles long. A sketch of the kind of ladder needed is subjoined.



8. The difficulties in the way of the introduction of fish on these hills are by no means small as may be judged from the following extracts from Mr. Buckand's book on fish, which I take the liberty of quoting here under head of enemies of ova. He writes, "First, accidents at the time of spawning. Many of the eggs do not get properly impregnated at the time of spawning, or not being caught in the gravel are washed away constantly by the stream. Then down come the floods and overwhelm the nests with mud and rubbish, or else sweep them bodily away level to the bed of the river * * *. Then, again, we have the reverse of floods, we have *droughts*; and the nests made when the water is high become bar and exposed to the air when the water goes down, either the eggs die from this cause, or else the young when hatched out have no water refuse to exist. I have seen a shallow ditch leading out of Rinslip reservoir one mass of dead fry of roach, dace and jack, the water having been let out of the canal.

"Fish eat the eggs, and these not only minor fish but trout. I have myself taken trout eggs from a trout's mouth, and so have other observers.

"Then we have water insects innumerable; the common water shrimp for example. These water shrimps will get into hatching boxes. Besides the water shrimp we have the larva of the May fly. These formidable creatures do an immensity of harm. They fasten on the egg, pierce them with their sharp nippers, and they turn white and dead in an instant.

"The larva of the dragon fly is also a destructive pest of the waters.

"There are other insects which eat the spawn besides those above mentioned. There are birds who are most destructive to spawn, and common ducks lead the van of these feathered

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poachers. Again, the swans are *most* destructive, gobbling up the newly laid spawn with their long beaks and spoon-like bills."

9. I think that if floods and drought and other lesser evils have proved in England to destroy the ova of fish (to say nothing of the destruction of the fish when growing up) to such an extent that only one salmon's egg out of every thousand deposited by the parent fish ever becomes a fish fit for human food, the destruction in this country where the floods and drought are much more severe and marked and the ravines steeper and more rocky must be infinitely greater.

10. In fact, I think a consideration of the subject shows that the introduction of fish on these hills is attended with greater difficulty than in England, and can only be carried out at a far greater cost.

From the Executive Engineer, Irrigation Range, to the Superintending Engineer, 7th Division, dated Bhowany, 4th March 1872, No. 1,335.

With reference to your endorsement dated 4th December 1871, on Government Order No. 2,960,* dated 23rd December 1871, I have the honour to report that there are no under-sluices in the Bhowany and Kodinelly anicuts, and it is, therefore, impracticable to construct fish-ladders in those anicuts at present. It has, however, for some time been under consideration to build a sluice at the east end of the Bhowany anicut; and when this is done a fish-pass, as recommended by Doctor Day, can easily be introduced. In the case of the Kodinelly anicut the same cannot be said. A sand sluice there would be most difficult to insert, nor is it very much wanted; a channel taken off at either end of the anicut providing sufficient scour to prevent the accumulation of silt and to render a sand-sluice not indispensable.

* Fish-passes.

2. Regarding the different kinds of fish in the Moyaur and Bhowany streams, the Bhowany channels and the Cauvery river, their habits, time of spawning, and best mode of preservation, I have collected all the information I could on the subject from local fishermen through the Tahsildars of Perindooray, Bhowany, and Suttiamangalum, and I beg to submit such information in the enclosed list. The only means that seems available here of preserving the fish under present circumstances is to prevent the annual wholesale destruction of it. This takes place in the dry season when there is very little water in the streams. If during that time the fishermen could be prevented from catching and destroying more than they may require for their actual livelihood, this would go far towards preventing the great destruction that now yearly takes place in the dry season.

List of Fishes in the Bhowany and Cauvery rivers, and in the Arkencottah, Thadapully and Calingaroyen channels; showing time of Spawning, etc.

No.	Names of Fishes.	Time of Spawning, etc.	Remarks.
1.	Keloothee	Spawn in April and deposit eggs in July.	*Velangoo* 1 foot to 3 feet long and 3 inches to upwards of 12 inches in circumference; generally caught by rod and line, and also in bamboo conical traps set in strong currents. All the others are caught by rods and nets. Small-sized fishes are generally taken in nets; caught in abundance in December, January, February, March and April. No fishes are caught while the rivers are in fresh.
2.	Nedoonderai Keloothee.		
3.	Tonam do. ...		
4.	Noy do. ...		
5.	Kendai ...		
6.	Tail Kendai ...		
7.	Punnivoy do. ...		
8.	Punjalai do. ...		
9.	Pothai do. ...		
10.	Valai		
11.	Parai Valai ...		
12.	Toottai do. ...		
13.	Velechee		

List of Fishes in the Bhowany and Cauvery rivers, etc.—(Concluded).

No.	Names of Fishes.	Time of Spawning, etc.	Remarks.
14.	Aurah		The *Ooloovai* deposits eggs in the rocky banks of rivers; *Kaloothee* in muddy banks, and remains with the young in deep water. The Valai, Kaloothee, Avoory, Ponathee, Kendai are large fishes. They are from 1 foot to 4 feet long and 6 inches to 2 feet in circumference. They remain always in deep water. The *Pauralmien* is a bright coloured fish 2 feet long and 2 feet in circumference, most of the other fishes not specially mentioned in this column are small in size, they are 3 to 12 inches long and 2 to 6 inches in circumference. Only small sized fish are caught in the Calingaroyen channel, the larger kinds do not live in the channel on account of its being closed once a year, and the frequent stoppages of water at the time of breaches in the channel.
15.	Prawns (rattoo) ...		
16.	Koravai		
17.	Ooloovai		
18.	Velangoo		
19.	Kockoomien		
20.	Porattan Koonjoo ...		
21.	Vellaranjee		
22.	Kolyaranjee		
23.	Aoranjee	Spawn in April and deposit eggs in July.	
24.	Pavoory		
25.	Ponathee		
26.	Kockoy Punnivoymien.		
27.	Karambai		
28.	Pauralmien		
29.	Tanan Paural		
30.	Karahmien		
31.	Irai		
32.	Alaree		
33.	Ikalooroo		
34.	Pellymien		
35.	Avoory...	Spawn in September and deposits eggs in December.	About thirty families of fishermen, or Sembadavan who live by catching fish and selling them, are at Bhowany.

No. 15. From the Superintending Engineer, 8th Division, to the Secretary to Government, Public Works Department, dated Madura, 8th January 1872, No. 3,811.

In reference to G. O. of the 23rd November 1871, No. 2,960, calling for any remarks or suggestions relative to the question of the preservation of fish in the rivers in the Madras Presidency, I have the honour to report that, as far as I can learn, there are no valuable fisheries in this division.

2. In the Tambrapoorney river at the Streeviguntum anicut, Executive Engineer Lieutenant Shepherd, R. E., states there are so few fish that he is not aware that a single fisherman earns a living by the fish caught there. If fish were stopped by the anicut, they would be caught there extensively; so it would seem unnecessary to construct a fish-ladder there.

3. Fishing is practised in all the larger tanks of this division. The establishment of a close season might be an advantage, but practically in these tanks there must now be a close season, or else the fishery would be destroyed.

4. I have already in the enclosure to my letter No. 1,155, dated 8th July 1871, recommended that the fishery of tanks should no longer be a direct source of revenue to the Government, but that these fisheries should be given over to the ryots cultivating under such tanks, on the condition that the ryots maintain their tanks in repair. No better means for the introduction of a close system can, as it appears to me, be devised than a plan of which the basis is self-interest.

No. 16. From the Special Executive Engineer, Wynaad, to the Secretary to Government, Public Works Department, dated Vythery, 9th May 1872, No. 214.

Reference to G. O. No. 2,960, dated 23rd November 1871.

There being no anicuts or other irrigation works in this district, paragraph 2 of the above Order calls for no remark from me; but I may observe with reference to paragraph 1, that great destruction of small fry occurs annually; in fact, were it not that in one or two of the larger rivers certain spots are held sacred and the fish strictly protected, and were it not for the difficulty of carrying on the destruction during the monsoons, fish would be entirely exterminated in the Wynaad streams.

2. The *modus operandi* generally in use is to make dams and weirs across the streams, turning the whole of the water into a narrow channel, at the end of which a fish-trap is placed, and the fish driven down into it. Nets with very small meshes are also used, and the river swept from end to end; but the most destructive of all methods is after fixing dams at intervals along the stream to throw in the fruit of a tree (with the name of which I am unacquainted) of a most deleterious nature, the effect being to stupify every fish in the locality and bring them floating to the surface, when, of course, they are easily secured. This practice is not only fatal to the fish, but is the cause also of acute diseases to people using the water of the poisoned streams for drinking purposes; were some measures adopted to prevent these destructive practices, I have no doubt that, constituting as they do the head waters of many large rivers, the streams of Wynaad would prove excellent and prolific breeding places for fish. I have seen very large fish taken from the Manantoddy river, which from its size, and from the protection afforded by the Pagoda on the banks, suffers less than other streams, amongst others a fish resembling a carp was brought to the house where I was stopping, which weighed over 65 lbs.

3. I think that the mischief might easily be prevented by the Adigarrics and other village authorities being instructed to send the perpetrators up for punishment, especially in the case where the water is poisoned, a few examples would soon put an entire stop to the practice.

No. 17. Order thereon, 1st August 1872, No. 1,822.

IRRIGATION, No. 1.

The Government in their Order No. 2,960 of the 23rd November 1871, called upon the Superintending Engineers for any suggestions they might have to offer relative to the question of the preservation of fish in the Madras Presidency, and for reports upon the success or otherwise of the fish-ladders already constructed.

2. In two divisions only have fish-ladders been constructed, namely, in the Kistna and in the Lower Coleroon anicut. Of the former the Superintending

Engineer reports that " the ladder appears easily surmountable by fish, but that he cannot find that any attempt it." Of the latter the Superintending Engineer of the 6th Division reports that after careful inquiries he is led to believe the ladder is not used by the fish for whose special benefit it was constructed.

3. The Superintending Engineers of the 1st, 2nd, 3rd, 5th and 8th Divisions offer no suggestion on the general subject of fish preservation in the rivers.

4. The Superintending Engineer of the 7th Division suggests that a "close season" be enforced, that the practice of "drugging fish" frequently resorted to in Canara be rendered penal, and that in emptying Irrigation channels for annual repairs certain precautions in the working of sluice and other shutters be observed.

5. The Superintending Engineer of the 6th Division attributes the disuse of the ladder in the Coleroon anicut to the velocity of the water passing down it, the small size of the bays and their unsheltered position, while the ladder not extending into still water, he thinks fish cannot be attracted by it. He considers that the velocity of the water and comparative insignificance of an opening 1½ feet square would prejudice the arrangement proposed by Doctor Day in his letter which accompanied G. O., No. 555, dated 25th February 1871, but that any extension of such a system to a number of under-sluice vents necessitating the working of double shutters would be open to serious engineering objections.

He advocates the construction of a lock somewhat similar to that proposed by Doctor Day, the enforcement of a close season of two months, and the offering of a small reward for the eggs or capture of alligators.

He would also advocate the prohibition of all fishing in the pools of the Coleroon river after January in each year, if it can be shown that such interference is really called for by the increasing diminution of the stock of fish in the river, which fact he appears to doubt.

6. The Special Executive Engineer in the Wynaad reports that the drugging of the fish in the west coast rivers is a prevalent custom, he would render such proceedings penal.

7. The Executive Engineer of the Neilgherries would urge the introduction of suitable fish into several of the larger streams and reservoirs, but considers the experiment would be attended with great difficulty.

8. The Government resolve to call upon the Superintending Engineer of the 6th Division to submit designs and estimates, (1) for the improvement of the existing ladder, (2) for the construction of a fish lock of the description recommended in his letter under review.

9. The Government are unable to reconcile the statement put forth in the report by the late Superintending Engineer of the 2nd Division with the fact that the fishery at the anicut is annually rented to contractors for a considerable sum, the season of the year selected for the Superintending Engineer's inquiries and the description of fish alluded to are not mentioned, while the success or otherwise of the ladder appears in no way deducible from the presence or absence of fish in the pool below. The report is so meagre and unsatisfactory that the Government

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desire that the Officiating Superintending Engineer will give the subject his best attention and submit a further and full report at the conclusion of the present irrigation season.

(True Extract.)

110/6

T. M. Holder Colonel, R.E.,
Secretary to Government.

To Superintending Engineers.
To Major R. B. Kennedy.
To the Acting Chief Engineer for Irrigation.
" Revenue Department.

Exd. E. C. Shunker.

Revenue 1872 Aug.
No. 2740

Govt. of {1872} Madras.

PUBLIC WORKS.

SUPERINTENDING ENGINEERS,

&c., &c., &c.

Dated August 1st.

Recd. 6 " 19 " Encl.

G. O., 1st August 1872, No. 1,822.

AUGUST.

Nos. 8-17

Preservation of Fish in the Madras Presidency.—Passing orders on papers on the subject of the preservation of fish in the Madras Presidency. No. 110

Govt. to Bd of Rev. dt. 24 Augt. 72.

Govt. to Bd of Rev. dt. 19 Augt. 72.